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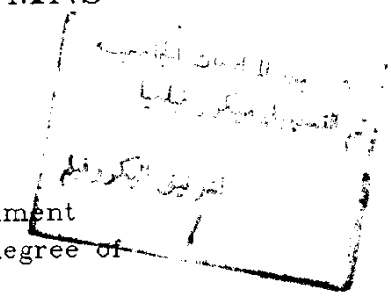

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Submitted in Partial Fulfilment
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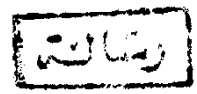

BY

Ashraf Essa Ahmed Morshed

B.Sc. in Civil Engineering

supervisors

Prof.Dr. SHAKER AHMED EL-BEHAIRY

Professor of Reinforced concrete
Faculty of Engineering
Ain Shams University

Dr. ABD-ELSALAM AHMED MOKHTAR

Lecturer of Theory of Structures
Faculty of Engineering
Ain Shams University

FACULTY OF ENGINEERING
AIN SHAMS UNIVERSITY

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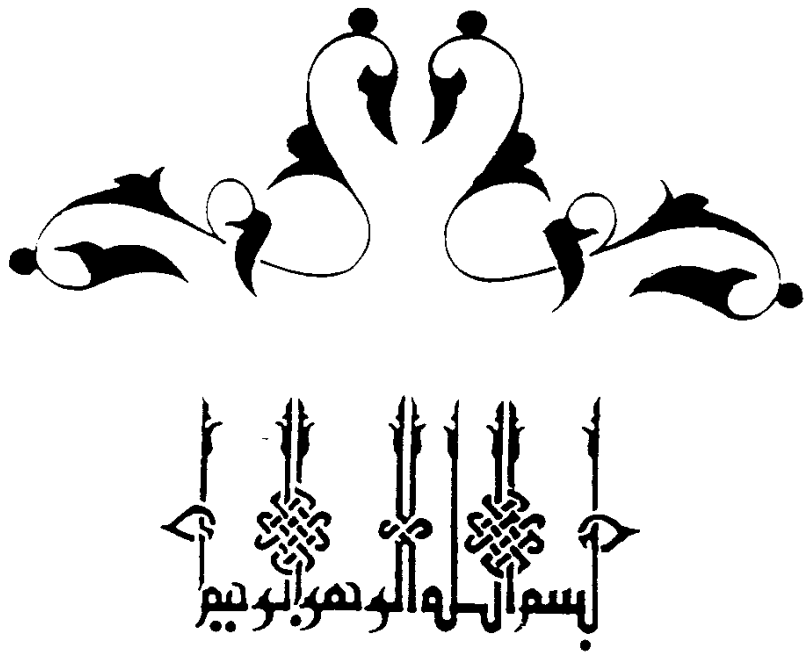
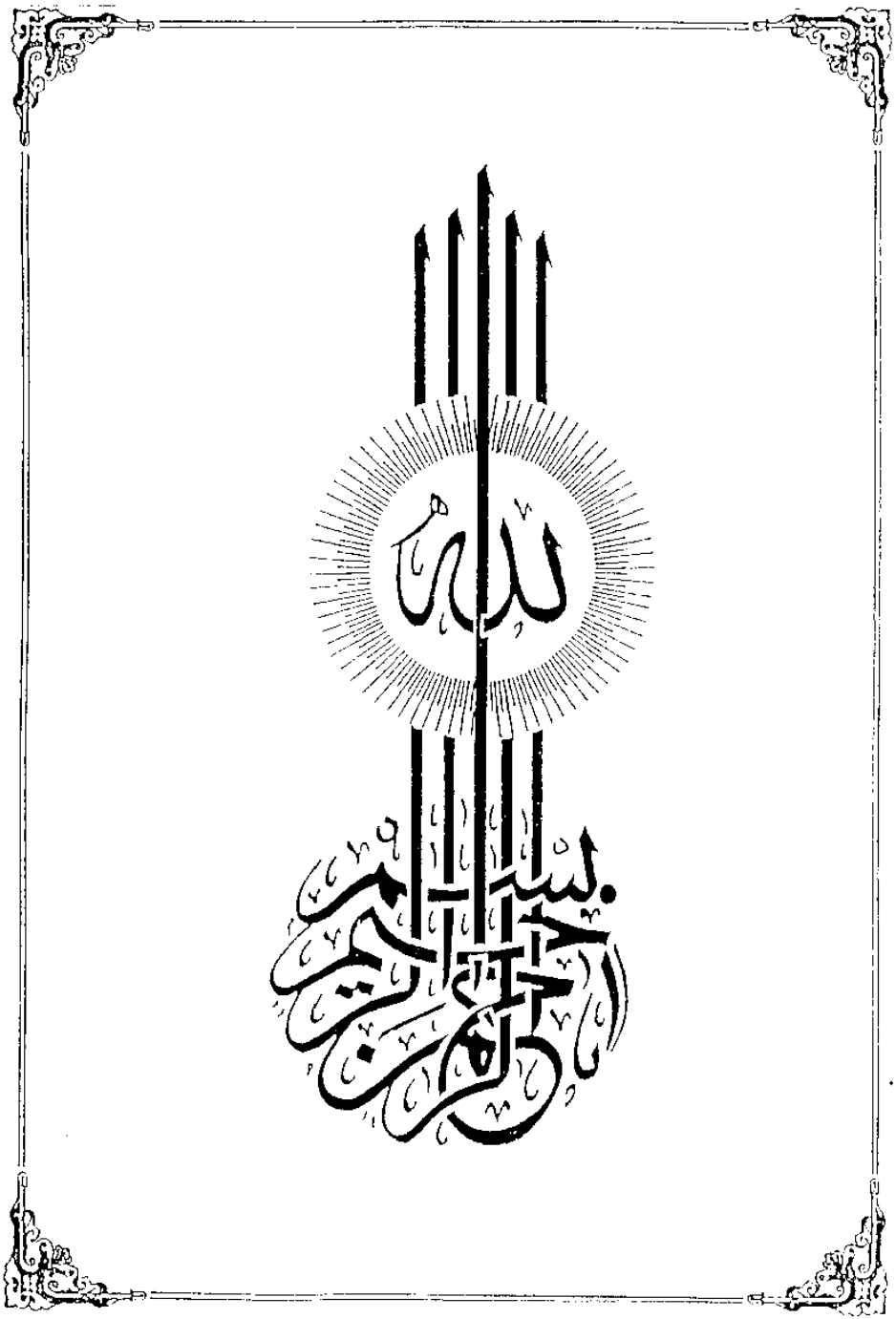
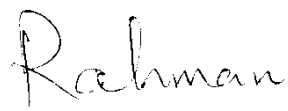




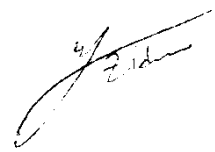
Examiners Committee

Name.Title & Affiliation — Signature

1- Prof.Dr.Ali Abd El-Rahman
Prof.of Reinforced Concrete,
Faculty of Engineering,
Cairo University .



2- Prof.Dr.Mostafa Zidan
Prof.of Structure Engineering,
Faculty of Engineering,
Ain Shams University.



2- Prof.Dr.Shaker Ahmed El-Behairy
Prof.of Reinforced Concrete
Faculty of Engineering
Ain Shams University

STATEMENT

This dissertation is submitted to Ain Shams University for the degree of M.Sc. in Civil Engineering.

The work included in this thesis was carried out by the author in the Department of Civil Engineering, Ain Shams University,

No part of this thesis has been submitted for a degree or a qualification at any other University or Institution

Date :

Signature: 

Name : Ashraf Essa Ahmed Morshed

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SUMMARY

Abstract:

The nonlinear behavior of laterally and rotationally restrained reinforced concrete long columns is investigated, through evaluation of the column internal forces, deformations, and capacity. The restraints provided by the frame elements to the column are modeled by rotational and translational springs attached to the column ends. The analysis is performed with a developed computer program which takes into account both the geometrical and material non-linearity. A parametric study is performed for the effect of relative rotational restraint and relative lateral restraint, and confinement of concrete by the ties on the long column moments and strength. Also a comparison with (ACI 89-318) and Egyptian code (EGP-89) for the estimated moments and failure load is presented.

The thesis consists of six chapters and 2 appendixes

Chapter 1:

This chapter represents an introduction to the study.

Chapter 2:

Contains a literature review of the available published works concerning long column behavior.

Chapter 3:

This chapter discusses the various effects of long column behavior, with a brief representation of the various methods for taking the nonlinear behavior of the long columns effects into consideration in long column analysis, followed by description of the material modeling ,system modeling , and the analysis method used in the study.

Chapter 4:

Represents the computer program for the nonlinear analysis of R.C. long column. This program is constructed to perform this study. It takes into account both the geometrical and material nonlinearity effects in the analysis.

Chapter 5:

Introduces the results of the parametric study performed for the effect of relative rotational restraint and relative lateral restraint, and confinement of concrete by the ties on the long column moments and strength .Also A comparison with the ACI(318-89), EGP(89) design rules for slender columns is presented in this chapter.

Chapter 6:

Provides the summary, conclusions of the study, and recommendations for future work.

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CHAPTER 1

INTRODUCTION